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From the tables having dispersions and refractive indices for arguments, a color curve for any ordinary lens might be easily predicted. In this connection, to be sure, the want of homogeneity in commercial glasses might have been touched upon. Irregularities of this kind justify Sir HOWARD GRUBB in his remark that "*object-glasses cannot be made on paper.*"

On page 184, we have a sample of what may be hoped for in the second volume, *viz.*, some general considerations regarding the choice of lens for any particular work; in other words, a weighting of the different corrections for various lines of work.

The pages of the first volume, interesting as they are, might have been considerably enlivened by bringing the discussions of the above type into closer juxtaposition with the mathematical treatment.

While the work, as it stands, is far from arid, one might easily finish its reading with the impression that all the errors mentioned were of equal importance. The appearance of the next part is expected with pleasure.

HENRY CREW.

ON VARIATIONS OF SHORT PERIOD IN THE LATITUDE\* [BY  
SIR WILLIAM THOMSON, PRESIDENT R. S.].

NOTE: At the anniversary meeting of the Royal Society of London, November 30, 1891, Sir WILLIAM THOMSON presided and delivered his annual address. An abstract of the address is given in *Nature* for December 3. From this abstract the following paragraphs are taken.

"A fundamental investigation in astronomy, of great importance in respect to the primary observational work of astronomical observatories, and of exceeding interest in connection with tidal, meteorological and geological observations and speculations, has been definitively entered upon during the past year, and has already given substantial results of a most promising character. The International Geodetic Union, at its last meeting in the autumn of 1890, on the motion of Professor FOERSTER, of Berlin, resolved to send an astronomical expedition to Honolulu, which is within  $9^{\circ}$  to the opposite meridian to Berlin ( $171^{\circ}$  west from Berlin), for the purpose of making a twelve months' series of observations on latitude corresponding to twelve months' analogous observations to be made in the Royal Observatory, Berlin. Accordingly Dr. MARCUSE went from Berlin, and, along with Mr.

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\* See *Publications A. S. P.*, vols. II, p. 135, III, p. 254.

PRESTON, sent by the Coast and Geodetic Survey Department of the United States, began making latitude observations in Honolulu about the beginning of June, 1891. In a letter from Professor FOERSTER, received a few weeks ago, he tells me that he has already received from Honolulu a first installment of several hundred determinations of latitude, made during the first three months of the proposed year of observations; and that, in comparing these results with the corresponding results of the Berlin Observatory, he finds beyond doubt that in these three months the latitude increased in Berlin by one-third of a second, and decreased in Honolulu by almost exactly the same amount. Thus, we have decisive demonstration that the motion, relatively to the earth, of the earth's instantaneous axis of rotation is the cause of variations of latitude which had been observed in Berlin, Greenwich, and other great observatories, and which could not wholly be attributed to errors of observation. This, Professor FOERSTER remarks, gives observational proof of a dynamical conclusion contained in my Presidential Address to Section A of the British Association at Glasgow, in 1876, to the effect that irregular movements of the earth's axis to the extent of half a second may be produced by the temporary changes of sea-level due to meteorological causes.

"It is proposed that four permanent stations for regular and continued observations of latitude, at places of approximately equal latitude, and on meridians approximately  $90^{\circ}$  apart, should be established under the auspices of the International Geodetic Union. The reason for this is that a change in the instantaneous axis of rotation in the direction perpendicular to the meridian of any one place would not alter its latitude, but would alter the latitude of a place  $90^{\circ}$  from it in longitude, by an amount equal to the angular change of the position of the axis. Thus two stations in meridians differing by  $90^{\circ}$  would theoretically suffice, by observations of latitude, to determine the changes in the position of the instantaneous axis; but differential results, such as those already obtained between Berlin and Honolulu, differing by approximately  $180^{\circ}$  in longitude, are necessary for eliminating errors of observation sufficiently to give satisfactory and useful results. It is to be hoped that England, and all other great nations in which science is cultivated, will co-operate with the International Geodetic Union in this important work."